

ABSTRACT OF DISCLOSURE

A method of generating parity data based on a low-density parity check matrix and an apparatus therefore. The method of generating parity data is based on a parity check matrix H having p codewords of length c , each codeword being divided in a message word of length m and parity data of length p , includes reordering columns of the parity check matrix H based on elements in each column having values of one to generate a reordered parity check matrix H' determining a cross-point I between a diagonal line $L2$ of a parity matrix part Mp in the parity check matrix H' and a reordered diagonal line $L1$ defined by a first entry of an element having a value of one in each column of the reordered parity check matrix H' , and, on the basis of positions of elements having a value of one in rows above a horizontal line $L3$ that passes through the cross-point I to perform column permutations on the reordered parity check matrix H' , to generate a triangular matrix T The method further includes using triangular matrix T and the message words to obtain a first part of the parity data, and using the equation $Hx=0$, where x is a codeword matrix, to obtain the remaining second part of parity data.